REMARKS

This paper responds to the Office Action mailed on April 2, 2007.

Claims 4-7, 14, 15 are amended, no claims are canceled, and claim 22 is added; as a result, claims 1-22 are now pending in this application.

Applicant amends claims 4-7 and 14 to correct minor informalities in the claims. Claims 4, 6, 7, 14, and 15 are amended to clarify the claims or to correct minor grammatical mistakes. Claim 5 is amended to correct a minor, obvious error in the dependency. No new matter is believed proposed herein. Entry of these amendments is requested.

Applicant also amends the specification and Figures 7a, 7b, and 7c to eliminate the oversight in using reference number "9" for two different elements. Specifically, the two flanges are now reference numbers 8, 8' and the reference number 9 is used for the outer wall in the figures and specification.

Applicant amends the title as required in the office action.

Declaration and Power of Attorney

A new oath or declaration was required in compliance with 37 C.F.R. 1.67(a). A newly executed Declaration (and Power of Attorney) identifying this application by application number and filing date accompanies this response. A new declaration is supplied herewith.

§112 Rejection of the Claims

Claims 5-8 were rejected under 35 U.S.C. § 112, second paragraph, for indefiniteness. Claims 6-8 were also rejected under 35 U.S.C. § 112, second paragraph, for indefiniteness. Applicant respectfully traverses and asserts that these claims meet the statutory requirements of 35 U.S.C. § 112. Reconsideration and withdrawal of these rejections is requested.

§103 Rejection of the Claims

Claims 1-9, 11 and 15 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hill et al. (U.S. Patent No. 6,084,228) in view of Kato et al. (U.S. Patent No. 5,553,775). Claims 10 and 16 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hill et al. (U.S. Patent No. 6,084,228) in view of Kato et al. (U.S. Patent No. 5,553,775) and further in view of

Ackerman et al. (U.S. Patent No. 5,022,930). Claims 12-14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Hill et al. (U.S. Patent No. 6,084,228) in view of Kato et al. (U.S. Patent No. 5,553,775) and further in view of Maruko et al. (U.S. Patent No. 4,362,931). Applicant respectfully traverses these rejections as a *prima facie* case of obviousness has not been made.

The Applicable Law

As discussed in *KSR International Co. v. Teleflex Inc. et al.* (U.S. 2007), the determination of obviousness under 35 U.S.C. § 103 is a legal conclusion based on factual evidence. *See Princeton Biochemicals, Inc. v. Beckman Coulter, Inc.*, 7, 1336-37 (Fed. Cir. 2005). The legal conclusion, that a claim is obvious within § 103(a), depends on at least four underlying factual issues set forth in *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966): (1) the scope and content of the prior art; (2) differences between the prior art and the claims at issue; (3) the level of ordinary skill in the pertinent art; and (4) evaluation of any relevant secondary considerations.

The Examiner has the burden under 35 U.S.C. § 103 to establish a *prima facie* case of obviousness. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988). To establish a prima facie case of obviousness, three basic criteria should be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. *M.P.E.P.* § 2142 (citing *In re Vaeck*, 947 F.2d, 488, 20 USPQ2d 1438 (Fed. Cir. 1991)).

An Office Action must "determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue." *KSR International Co. v. Teleflex Inc. et al.* (U.S. 2007). The court in KSR further noted that "to facilitate review, this analysis [supporting a rejection under 35 U.S.C. § 103(a)] should be made explicit." *Id.*

Specifically, the Office Action must provide specific, objective evidence of record for a finding of a suggestion or motivation to combine reference teachings and must explain the reasoning by which the evidence is deemed to support such a finding. *See KSR Int'l Co.*, p. 14,

citing *In re Kahn*, 441 F. 3d 977, 988 (Fed. Cir. 2006); *In re Sang Su Lee*, 277 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002).

Even if adding an element to a prior art was obvious, that does not establish that the claimed invention encompasses obvious subject matter. *KSR Int'l. Co.*, p. 19, ¶ 1. Instead, following factors can still be considered to determine whether a claimed invention at issue is nonobvious under 35 U.S.C. § 103(a): (1) whether the claimed invention yields more than predictable results (id. p. 12, ¶¶ 1-2); (2) whether there is technical difficulties in combining the prior arts, requiring substantial reconstruction or redesign (id. p. 19, ¶ 1); (3) whether the prior art cannot be upgraded to or teaches away from the claimed invention (id. p. 22, ¶ 2); (4) whether the prior arts have secondary factors which may 'dislodge' obviousness – "long felt and unresolved needs", "the failure of others", "commercial success" (id. p. 2, ¶ 3); and (5) whether the prior arts require elements of the invention to be read using hindsight to be relevant to the claimed invention (p. 17, ¶ 3).

Therefore, the test for obviousness under §103 must take into consideration the invention as a whole; that is, one must consider the particular problem solved by the combination of elements that define the invention. *Interconnect Planning Corp. v. Feil*, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir.1985). The Examiner must, as one of the inquiries pertinent to any obviousness inquiry under 35 U.S.C. §103, recognize and consider not only the similarities but also the critical differences between the claimed invention and the prior art. *In re Bond*, 910 F.2d 831, 834, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990), *reh'g denied*, 1990 U.S. App. LEXIS 19971 (Fed. Cir.1990). The fact that a reference teaches away from a claimed invention is highly probative that the reference would not have rendered the claimed invention obvious to one of ordinary skill in the art. *Stranco Inc. v. Atlantes Chemical Systems, Inc.*, 15 USPQ2d 1704, 1713 (Tex. 1990). When the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious. *Id.* p. 4 citing *United States v. Adams*, 383 U.S. 39, 51-51 (1966). Additionally, critical differences in the prior art must be recognized (when attempting to combine references). *In re Bond*, 910 F.2d 831, 834, 15 USPQ2d 1566, 1568 (Fed. Cir. 1990), *reh'g denied*, 1990 U.S. App. LEXIS 19971 (Fed. Cir.1990).

Furthermore, the Court in *KSR* reaffirmed that "[a] factfinder should be aware, of course, of the distortion caused by hindsight bias and must be cautious of argument reliant upon ex post reasoning." *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 82 USPQ2d at 1397. *See also Graham v. John Deere Co.*, 383 U.S. at 36, 148 USPQ at 474.

Not all elements of claim 1 are found in the references as arranged in the claim

Claim 1 recites, in part, "a printed circuit board placed in such way in the housing that one of printed circuit board edges faces the transparent or translucent portion." Applicant can not find this feature in Hill or Kato, either alone or in combination. More specifically, applicant is unable to find a printed circuit board in the secondary document issued to Kato (US 5,553,775). Hill (US 6,084,228) appears to have a circuit board 20. However, this circuit board 20 does not have an edge that faces a transparent or translucent portion as recited in present claim 1. Hill's circuit board 20 is positioned in the assembly of the diffuser retainer 30, housing 40, diffuser 50, optical separator 60, and cap 70. The diffuser 50 is positioned over the circuit board 20 (col. 3, lines 7-8). Diffuser retainer 30 includes

> a vertical channel 35 disposed within an interior circumference of the diffuser retainer 30. The channel 35 is preferably provided with a channel width x that corresponds closely to a width x' of the circuit board 20. As demonstrated in the exploded view of FIG. 4, the channel 35 is adapted to slidably receive the circuit board 20 and maintain it in a substantially vertical orientation with regard to the housing 40 and the diffuser 50. (Col. 3, lines 19-26)

With reference to FIGS. 3-4 of Hill, the circuit board 20 would have its edge adjacent the optic separator 60 and not the cap 70, which Hill describes as "not a light modulator" (col. 5, lines11-16), or the optic separator 60, which Hill describes as

> The optic separator 60 ensures that the photodetector 21 will receive incident solar radiation from a direction opposite that of the incident radiation received by the photodetector 22 and that both photodetectors 21, 22 will have strong responses to incidental radiation close to the horizon. (col. 5, lines 23-28)

That is, the optic separator 60 is not described as translucent or transparent.

Hill further states that "because the photodetectors 21, 22 are mounted on opposite sides of the circuit board 20 and their respective fields of view are bounded by the optic separator 60, the dual zone solar sensor 10 of the present invention does not need to calculate the position of

the sun using complex, delicate, and bulky circuitry and other electronic signal processing components." Col.5 line 62 – col. 6, line 1. Accordingly, the optic separator is not translucent or transparent.

Based at least on the above, the combination of Hill and Kato fail to teach all of the elements of claim 1 as arranged in the claim. Reconsideration and withdrawal of the rejection of claim 1 and its dependent claims 2-16 are respectfully requested.

Claim 1 further recites, in part, "at least a first and a second sensing element sensitive to radiation are placed at a first side of the printed circuit board, where the first and second sensing elements are separated by a first flange, serving as a shading element, at least a third sensing element sensitive to radiation is placed at a second side of the printed circuit board. Applicant further points out that Hill and Kato each describe two sensors. Applicant can find no teaching or need of a third sensor in either Hill or Kato. Moreover, Hill is titled Dual Zone Solar Sensor, which implies the need for only two sensor zones. As Hill and Kato, either alone or in combination, fail to teach or suggest a third sensor, applicant requests reconsideration of the rejection of claim 1.

The Office Action states at page 5

> It is herein considered that the inclusion of said flange (78) would create sub compartments, each containing one sensing element. Selecting a known available configuration of sensors to detect sunlight would have been obvious. Hence, at the time of the invention, it would have been obvious to modify the sensing element disclosed by Hill et al. and including the sensor configuration taught by Kato et al., in order to provide improved sensing of the solar radiation."

Applicant respectfully traverses this passage. Inclusion of the flange or Kato in Hill would not necessarily create subcompartments with each containing one sensor element. If combined, which applicant does not admit is possible or appropriate under legal standards, there is disclosure of how the combination would appear. The only teaching of one sensor in each subcompartment is from the applicants own disclosure.

With regard to claim 5, applicant respectfully traverses. The Office Action states "It is herein considered that the inclusion of said flange (78) would create sub compartments, each containing one sensing element." However, neither Hill nor Kato include subcompartments as defined by claim 5. Further Hill and Kato only include at best two regions, one each for the two

sensors described in these patents. As such, there is not reason for combining Hill and Kato and even if combined Hill and Kato do not teach all of the claimed elements of claim 5.

No Reasonable Expectation of Success

As neither Hill or Kato discloses a sensor comprising three sensing elements, it is not possible to acquire data regarding azimuth, elevation and intensity of incident solar radiation using the sensor arrangements according to Hill and Kato. Neither Hill nor Kato address the problems solved by the presently described invention. More particularly, the skilled person starting with Hill and facing the problem that the present invention sets out to solve, would not turn to Kato, since Kato is directed towards a solar sensor having two sensor elements that face the same direction. Kato thus discloses such a different sensor configuration that the skilled person would not turn to that disclosure for guidance. As such, one of ordinary skill in the art would not look to solve the problems identified by the present application by referring to Hill and Kato. Accordingly, there is no reasonable expectation of success in combining Hill and Kato.

More than predictable results

Applicant further asserts that the sensor structure recited in claim 1 provides more than predicable results. More specifically, the claimed sensor is capable of providing data regarding azimuth, elevation and intensity of incident solar radiation, which is not predicted by the applied references. As an example, for a driver of a vehicle, there is large difference between if an intensity drop depends on that a cloud has appeared in front of the sun (then the sun might still impinges into the vehicle), and if an intensity drop depends on that the angle of incidence has changed (then the sun might not impinge into the vehicle any more). As such the present claim 1 is not obvious in view of the applied references.

Substantial Reconstruction of the references

In order to arrive at the presently claimed invention as defined by claim 1, Hill must be substantially reconstructed and changed. That is, the placement of the horizontally oriented

sensors of Kato with its upstanding partition wall 78 would change the light entering the diffuser lenses 52. This may interfere with the stated purpose of Hill of

> The precise desired angular response may be obtained by modifying the original angular response with two diffusers. One diffuser is positioned over each photodetector and is movable horizontally with respect to those photodetectors in order to calibrate the sensor.
>
> Such a configuration permits the skilled artisan to calibrate the sensor and then permanently install the diffusers in the calibrated orientation to thereby minimize part-to-part variation. The simplicity of this design minimizes the number of parts necessary to provide the desired light position information, while simultaneously making it easier to obtain high responses to light close to the horizon. This latter benefit is especially important for controlling the interior environments of motor vehicles. Col. 1. line 56 – col. 2, line 3.

As a result, combining Hill with Kato would require substantial reconstruction of Hill and may interfere with Hill's stated purpose.

Hindsight Reconstruction

Applicant respectfully submits that any combination of Hill and Kato would require impermissible hindsight reconstruction of the presently claimed invention. That is, there is no suggestion or teaching in Hill or Kato to combine the two reference and then alter there explicit teaching to arrive at the present invention. The Office Action states

> It is herein considered that the inclusion of said flange (78) would create sub compartments, each containing one sensing element. Selecting a known available configuration of sensors to detect sunlight would have been obvious. Hence, at the time of the invention, it would have been obvious to modify the sensing element disclosed by Hill et al. and including the sensor configuration taught by Kato et al., in order to provide improved sensing of the solar radiation.

This is clearly hindsight reconstruction of the present invention as neither Hill nor Kato provide any reason to combine and then alter their teachings. For example, Hill discloses a circuit board with two sensors. Kato discloses two sensor elements (68, 70) in the same plane, which elements are positioned on a base plate (76). Kato's does not seem to be related to neither the

problem, nor the solution, since the sensor elements face the same direction. Neither Hill or Kato discloses a sensor comprising three sensing elements. It is not possible to acquire data regarding azimuth, elevation and intensity of incident solar radiation using the sensor arrangements according to neither Hill nor Kato.

Allowable Subject Matter

Claims 17-21 were allowed.

Claims 18, 20 and 21 were allowed at least on the basis of their dependency upon an allowable base claim.

RESERVATION OF RIGHTS

In the interest of clarity and brevity, Applicant may not have addressed every assertion made in the Office Action. Applicant's silence regarding any such assertion does not constitute any admission or acquiescence. Applicant reserves all rights not exercised in connection with this response, such as the right to challenge or rebut any tacit or explicit characterization of any reference or of any of the present claims, the right to challenge or rebut any asserted factual or legal basis of any of the rejections, the right to swear behind any cited reference such as provided under 37 C.F.R. § 1.131 or otherwise, or the right to assert co-ownership of any cited reference. Applicant does not admit that any of the cited references or any other references of record are relevant to the present claims, or that they constitute prior art. To the extent that any rejection or assertion is based upon the Examiner's personal knowledge, rather than any objective evidence of record as manifested by a cited prior art reference, Applicant timely objects to such reliance on Official Notice, and reserves all rights to request that the Examiner provide a reference or affidavit in support of such assertion, as required by MPEP § 2144.03. Applicant reserves all rights to pursue any cancelled claims in a subsequent patent application claiming the benefit of priority of the present patent application, and to request rejoinder of any withdrawn claim, as required by MPEP § 821.04.

CONCLUSION

Applicant respectfully submits that the claims are in condition for allowance, and notification to that effect is earnestly requested. The Examiner is invited to telephone Applicant's attorney at (612) 349-9587 to facilitate prosecution of this application.

If necessary, please charge any additional fees or credit overpayment to Deposit Account No. 19-0743.

Respectfully submitted,

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Date: October 1, 2007

By _____
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CERTIFICATE UNDER 37 CFR 1.8: The undersigned hereby certifies that this correspondence is being filed using the USPTO's electronic filing system EFS-Web, and is addressed to: Mail Stop Amendment, Commissioner of Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 1sdt day of October 2007.

PATRICIA A. HULTMAN

Name

Signature